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(54) Shoe

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Abstract

The invention relates to a shoe which comprises a flexible upper with parts of the upper which can be braced relative to one another in the instep region and with a heel cap provided at the rear as well as a rotary tensioning fastener borne by the upper with a tension cable which can be wound onto a cable pulley and unwound therefrom for the purpose of reciprocal drawing together and loosening of the parts of the upper. An attachment of the rotary fastener which is particularly favourable in production terms as well as a particularly good drawing together of the corresponding parts of the upper is achieved by constructing the heel cap in its central rear region with a raised extended portion to receive and fix the rotary tensioning fastener.

Shoe

The invention relates to a shoe according to the preamble to Claim 1.

Shoes of the aforementioned type are known in the art in various forms and are constructed above all in the form of relatively sports-type shoes, such as for example, running shoes, tennis shoes, basketball boots, trekking and hiking shoes, military boots, cross-country shoes or the like. In this case the shoes are generally of the type which has a relatively flexible upper which has in the instep region two parts which are adjustable relative to one another as well as a rear stiffening heel cap, and these shoes have a rotary tensioning fastener supported on the upper as a central fastener and having a tension cable which is guided by way of deflecting guides provided on the parts of the upper or on straps fastened thereon, so that this tension cable can be wound onto a cable pulley and unwound from this cable pulley for the purpose of reciprocal relative drawing together and loosening of these parts of the upper. A rotary tensioning fastener of the said type is described for example in EP-A-412 290. In the aforementioned shoes which are known in the art the fastener housing, together with the fastener elements of the rotary tensioning fastener which are supported thereon, is generally disposed in the instep region of the upper, particularly on a tongue constructed there, and the parts of the upper which are to be drawn together or the lateral straps associated therewith are disposed on both sides of the instep.

The object of the invention is to improve a shoe of the type set out in the preamble in such a way that it is distinguished on the one hand by a relatively simple and conveniently produced attachment of the rotary tensioning fastener and on the other hand by a particularly good fit on the

foot.

This object is achieved according to the invention by the combination of features in the characterising portion of Claim 1.

Advantageous embodiments and further developments of the invention are the subject matter of the subordinate claims.

A first feature which is essential to the invention is the heel cap, which is widened somewhat by quite simple means by comparison with known constructions in so far as this heel cap has in its central rear region (i.e. approximately symmetrically with respect to the vertical longitudinal central plane of the shoe) a raised extended portion which is constructed as a fastener support to accommodate and fix the rotary tensioning fastener. Thus the heel cap can be largely of the same construction as that of the known shoes and in the said central rear region it merely has an additional flap-like extended portion which is sufficiently wide and sufficiently raised. Thus this heel cap constructed according to the invention serves both for its actual purpose of stiffening the heel region of the upper of the shoe and also for favourable accommodation and reliable holding of the rotary tensioning fastener. The extended portion of the heel cap which serves as the fastener support can be attached extremely simply, particularly integrally formed, on the central rear region of the heel cap. If it is imagined for example that this heel cap is moulded from corresponding synthetic material, then the extended portion which serves as the fastener support can be moulded on extremely simply and favourably during the production of the heel cap.

Since in this construction according to the invention - by contrast to the known shoes of the aforementioned type - the

rotary tensioning fastener is attached in the heel region of the shoe or the shoe upper, by a sensible combination it is ensured that a loop formed from the single tension cable extends from the rotary tensioning fastener borne by the heel cap and passes around the foot and over a lacing section in the instep region. In this way in the shoe constructed according to the invention not only is reliable lacing in the instep region ensured but also an extremely advantageous drawing together or lacing of the upper between the instep region and heel region, particularly in the region below the ankle, which leads to a particularly good and firm fit of the shoe on the foot.

In an advantageous embodiment of the invention a fastener-receiving recess is made so that it is aligned centrally with respect to the longitudinal axis or to the vertical longitudinal central plane of the shoe in the extended portion of the heel cap, and the fastener housing of the rotary tensioning fastener is received in a form-locking manner and fixed in this recess. Such a recess can be made simultaneously with the production and shaping of the heel cap, for example with the aid of a relatively simple and appropriately adapted shaping or stamping tool. Thus the rotary tensioning fastener can not only be simply attached to the extended portion of the heel cap but can be built into or integrated in this extended portion.

If within the context of the foregoing it is assumed that at least the heel cap is covered in the usual way with an outer material or leather used for the upper, then the rotary tensioning fastener is advantageously built into the fastener-receiving recess to such a depth that only the rotary actuating knob of the fastener which has a relatively shallow outward curve projects over the outer material towards the outside. Thus a particularly attractive construction of the shoe is ensured.

In many shoes, particularly sports shoes, in which a particularly good fit of the shoe on the foot is desired, it is also advantageous if the recess to receive the fastener is disposed in the extended portion of the heel cap with the rotary tension fastener in the region above the actual heel of the foot. If it is imagined in this connection that in the region above the actual heel of the foot - viewed in the lateral profile of the foot - there is a rear region of the foot which is curved forwards and inwards (approximately outside the Achilles tendon), then this forward/inwardly curved region of the foot is particularly suitable for the attachment of the rotary tensioning fastener because in this way a particularly good fit of the shoe on the foot is created since by this means any slipping of the foot out of the shoe is counteracted. Naturally, the attachment of the rotary tensioning fastener in this region is carried out in such a way that no undesirable pressure is exerted on the said region of the foot or on the Achilles tendon, which is favoured by a relatively flat construction of the rotary tensioning fastener.

The invention will be explained in greater detail below with the aid of several embodiments which are illustrated in the drawings, in which:

Figure 1 shows a perspective side view of a shoe constructed according to the invention in the form of a half-shoe or sports shoe;

Figure 2 shows a detail in perspective view of a heel cap constructed according to the invention with an associated rotary tensioning fastener which has not yet been installed;

Figure 3 shows a perspective side view of a further embodiment for a shoe according to the invention, in this case with a high upper (in boot form);

2114387

Figure 4 shows a detail in perspective view of the heel cap with built-in rotary tensioning fastener for a shoe construction according to Figure 3;

Figure 5 shows an enlarged sectional view, approximately along the line V-V in Figure 4.

A first embodiment of the shoe according to the invention will be described with the aid of Figures 1 and 2; the shoe illustrated in Figure 1 is constructed for example in the form of a half-shoe, particularly in the form of a sports shoe such as a running shoe, tennis shoe or the like.

According to Figure 1 this sports shoe comprises a relatively flexible upper 1 and a conventional adapted sole 2.

The upper 1 has in its instep region 3 two parts 1a, 1b which can be braced relative to one another as well as a stiffening heel cap 4 which is attached or built in at the back and which is illustrated in detail - in perspective view - in Figure 2.

A rotary tensioning fastener 5 which acts as a central fastener is borne by the upper 1. This rotary tensioning fastener 5 can be constructed in a relatively flat adapted shape, for example according to EP-A-412 290 (and here in particular corresponding to the examples according to Figures 4 to 7). Accordingly - as can also be seen to some extent from Figure 5 - this rotary tensioning fastener 5 has as essential parts a fastener housing 6, a cable pulley 7 which is rotatably mounted and drivable in the fastener housing 6, a rotary actuating knob 8 which can be rotated in one or the other direction, as well as one single tension cable 9. The two ends 9a of this tension cable are preferably fixed, particularly welded, in the cable pulley 7, so that a closed loop of cable 9b is formed outside the fasten-

2114387

er housing 6.

As is indicated in Figure 1, several cable deflecting guides 10 are distributed in the longitudinal direction of the shoe and attached on the edge portions of the parts 1a and 1b of the upper which face one another, and the cable 9, particularly the loop of cable 9b, is guided by way of these cable deflecting guides so that portions of tension cable cross over one another along the instep region, i. e. in a lacing section 11, forming cross-over points 12, 12a. A good construction and corresponding length of the lacing section 11 ensure a reliable lacing of the shoe in the front part and instep region 3 thereof.

As is known *per se* from rotary tensioning fasteners (e. g. EP-A-412 290), by means of a corresponding rotary movement of the rotary actuating knob 8 and thus by means of a corresponding rotary drive of the cable pulley 7 the tension cable 9 can be wound onto the cable pulley 7 or unwound from this cable pulley 7 for the purpose of reciprocal drawing together or loosening of the parts 1a and 1b of the upper.

As can be seen in Figure 1, the shoe according to the invention bears the rotary tensioning fastener 5 in the heel region of this shoe. For this purpose - as illustrated in greater detail in Figure 2 - the heel cap 4 has in its central heel region 4a an approximately flap-like or strip-like raised extended portion 13 which is sufficiently wide and is raised sufficiently high that it can be constructed as a fastener support to receive and fix the rotary tensioning fastener 5.

For this purpose a fastener-receiving recess 14 is made in the extended portion 13 and is aligned centrally for instance with respect to the longitudinal axis A or to a vertical longitudinal central plane of the shoe, and



according to Figure 2 this recess can be constructed in the form of a through hole at the upper end of the extended portion 13 and is adapted in its internal diameter to the external diameter of the fastener housing 6, so that the latter can be received in a form-locking manner and fixed in this fastener-receiving recess 14. For this purpose - as shown in Figures 2 and 5 - the fastener housing 6 can have two hooked projections 15 which lie approximately diametrically opposite one another and which are formed in correspondingly shaped cut-outs 16 in the region of the fastener-receiving recess 14 in the extended portion 13. Furthermore, channel-shaped or groove-shaped guides 17 for the portions of the tension cable 9 running there are made in lateral regions of the extended portion 13 which lie approximately diametrically opposite one another with respect to the fastener-receiving recess 14.

The heel cap 4 is preferably produced as a whole, i.e. including the extended portion 13, in a manner which is known *per se* from a relatively firm material in order to be able to ensure the desired rigidity in this region of the upper 1. However, this material should still be somewhat or partially flexible, so that the fastener housing 6 can be snapped into engagement in the fastener-receiving recess 14 by corresponding gentle bending of the heel cap 4 and can be taken out again by a similar bending of the heel cap 4 if this should be necessary for replacement or repair of the rotary tensioning fastener 5 or the tension cable 9.

The arrangement and attachment of the rotary tensioning fastener 5 according to the invention in the heel region of the shoe or of the shoe upper 1 also makes it possible in an advantageous manner for the loop of cable 9b formed by the tension cable 9 to be guided as a whole over the shoe upper 1 in such a way that it extends from the rotary tensioning fastener 5 borne by the heel cap 4 around the foot -

indicated by a dash-dot line at 18 in Figure 1 - and over the lacing section 11 in the instep region 3. This results overall in a particularly good fit of the foot 18 in this shoe, as can be seen from Figure 1. If required, this fit can be further enhanced if - as is also shown by a dash-dot line in Figure 1 - the fastener-receiving recess 14 with the rotary tensioning fastener 5 is disposed above the actual heel of the foot 18 and the loop of cable 9a is guided along in the region just below the edge 1c of the upper surrounding the opening 19 through which the foot enters the shoe. As a result of this the upper 1 can also lie relatively close to the corresponding region of the foot, even in the region of the edge 1c of the upper, so that the especially enhanced fit of the foot 18 in the shoe is still further improved.

With the aid of Figures 3 and 4 an embodiment of the shoe according to the invention with a high upper is illustrated, that is to say in a construction approximately in the form of a more or less high boot such as for instance a basketball boot, trekking or hiking shoe or the like. The general basic construction of this boot according to Figures 3 and 4 is largely the same as that of the half-shoe according to Figures 1 and 2, so that parts of the boot according to this second embodiment (Figures 3 and 4) which are of substantially the same construction are given the same reference numerals as in the example of the half-shoe according to Figures 1 and 2, and therefore a repeated detailed explanation of these parts of the shoe can be largely omitted.

Accordingly the shoe or boot according to Figures 3 and 4 comprises above the sole a sufficiently flexible upper 21 which again has in the instep region 23 two upper parts 21a and 21b which can be braced relative to one another as well as a stiffening heel cap 24 which is built in at the back. The rotary tensioning fastener 5 is again borne by the upper

2114387

21 in the heel region, and in fact - in the same way as in the first example (Figures 1 and 2) - is borne by the raised extended portion 13 which is constructed as a fastener support and is in this case the heel cap designated by 24. The construction and function of the rotary tensioning fastener 5 as well as the guiding of the associated tension cable 9 are substantially similar in an appropriately adapted way to those explained above with the aid of Figures 1 and 2. In particular, in this case too the housing 6 is received and fixed in a form-locking manner in the fastener-receiving recess 14 in the extended portion 13, as has been explained above with the aid of Figures 2 and 5; the same applies to the guides 17 and the tension cable 9.

One special feature of the shoe construction illustrated in Figures 3 and 4 can be seen in the fact that in the heel cap 24 which in its basic design is constructed and produced in the same way as in the example of Figures 1 and 2 the side parts are extended upwards in such a way that at least in the region of the ankle (indicated by a dash-dot line at 20 in Figure 3) a stabilising support 24a or 24b is formed on each side, and these stabilising supports give this boot a sufficient and particularly reliable rigidity against bending strains of the ankle joint without thereby impairing the comfort of the entire shoe.

In this construction the loop 9a of tension cable 9 is advantageously guided along on the outer faces of the stabilising supports 24a, 24b, as is indicated in Figures 3 and 4. If the corresponding portions of tension cable are guided along on the outer face of the stabilising supports 24a and 24b, then a particularly good contact of the stabilising supports on the corresponding regions of the foot is ensured and with it also a particularly good lateral fit of the foot 18 in the shoe. However, in this construction there is a general prerequisite that the heel cap 24 (and

with it the stabilising supports 24a, 24b as well as the extended portion 13) is covered by the outer material of the shoe.

However, in many shoe constructions, whether they are half-shoes approximately according to Figure 1 or shoes in boot form with a raised upper according to Figures 3 and 4, the stiffening heel cap is disposed on the outside of the outer material of the upper. In such cases it is then advantageous for the tension cable 9 or the corresponding portions (loop portions) thereof to be guided along on the inside of the side parts of the heel cap (approximately between these side parts and the outer material of the upper).

Particularly in a shoe construction with a high upper according to Figures 3 and 4, it is advantageous to arrange the rotary tensioning fastener 5 explained above with the aid of Figures 1 and 2 in the region above the actual heel 18a of the foot 18, since here - as can be seen in Figure 3 - the rotary tensioning fastener 5 can be arranged, without problems and without any hindrance of the foot, in the rear part of the foot which is the most curved forwards and inwards.

As can also be seen with the aid of Figure 4 and 5, in the case of shoe constructions in which at least the heel cap 4 or 24 is coated with an outer material (outer leather) 25 of the upper 1 or 21, it is also extremely advantageous if the rotary tensioning fastener 5 or the housing 6 thereof is built into the fastener-receiving recess 14 of the heel cap 4 or 24 to such an extent that only the rotary actuating knob 8, which has a relatively shallow curve, of the fastener 5 projects outwards over the outer material 25. This means that the rotary tensioning fastener can be built into the heel cap or the extended portion 13 thereof to such an extent that only the rotary actuating knob 8 is still

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sufficiently accessible for rotary actuation thereof.

A further advantageous embodiment of this shoe will be explained with the aid of Figure 1. According to this a pull-flap 26, which extends approximately in a straight line and is constructed approximately in the shape of a strip and has at least one gripping end 26a for pulling the uppermost tension cable crossover point 12 off from the instep region 3, is placed below the uppermost tension cable crossover point 12 of the lacing section 11 which is constructed in the instep region 3 symmetrically with respect to the longitudinal central axis A of the shoe. This is particularly advantageous if the rotary tensioning fastener is constructed approximately according to the aforementioned EP-A-412 290 (cf. the examples according to Figures 4 to 7 thereof) and thus the cable pulley 7 can be freed by a thrust movement (cf. part 27 in Figure 5) exerted on a locking element for quick unwinding of the tension cable by disengagement of the rotary drive thereof.

Furthermore, in this construction the part of the pull-flap 26 located below the uppermost tension cable crossover point 12 can form a sliding guide support for the corresponding portions of tension cable.

Moreover, the gripping end 26a of the pull-flap 26 can be releasably fixed on the outer face of the upper 1 in the lacing section 11, for example with the aid of a hook and loop fastener, a press-button or the like, particularly if this pull-flap 26 is relatively long. In this case, if - as shown in Figure 1 - the greater part of the pull-flap 26 extends approximately centrally and longitudinally over the lacing section 11, then this pull-flap 26 can still cover at least a part of the crossing portions of tension cable.

Claims

1. Shoe, comprising
  - a) a flexible upper (21, 22) which has in the instep region (3, 23) two parts (1a, 1b, 21a, 21b) which can be braced relative to one another as well as a rear stiffening heel cap (4, 24),
  - b) a rotary tensioning fastener (5) borne by the upper (1, 21) and having a fastener housing (6), a cable pulley (7) which is rotatably mounted and drivable in the fastener housing, a rotary actuating knob (8) as well as one single tension cable (9) which is guided by way of cable-deflecting guides (10) provided on the parts of the upper and can be wound onto the cable pulley and unwound from this cable pulley for the purpose of reciprocal drawing together and loosening of these parts of the upper,

characterised by the combination of the following features:

- c) the heel cap (4, 24) has in its central rear region (4a) a raised extended portion (13) which is constructed as a fastener support to accommodate and fix the rotary tensioning fastener (5);
  - d) a loop (9b) formed from the tension cable (9) extends from the rotary tensioning fastener borne by the heel cap (4, 24) and passes around the foot (18) and over a lacing section (11) in the instep region (3, 23).
2. Shoe as claimed in Claim 1, characterised in that a fastener-receiving recess (14) is made so that it is aligned centrally with respect to the vertical longitudinal central axis (A) of the shoe in the extended portion (13) of the

heel cap (4, 24), and the fastener housing (6) is received in a form-locking manner and fixed in this recess.

3. Shoe as claimed in Claim 2, characterised in that the heel cap (4) including the extended portion (13) is produced from a relatively firm but still somewhat flexible material, particularly synthetic material, and the fastener housing (6) can be snapped into engagement in the fastener-receiving recess (14) and released by gentle bending of the heel cap.

4. Shoe as claimed in Claim 2, characterised in that guides (17) for the tension cable (9) are made in lateral regions of the extended portion (13) which lie approximately diametrically opposite one another with respect to the fastener-receiving recess (14).

5. Shoe as claimed in Claim 2, in which at least the heel cap (4, 24) is covered with an outer material (15) used for the upper (1, 21), characterised in that the rotary tensioning fastener (5) is built into the fastener-receiving recess (14) of the heel cap (4, 24) to such a depth that only the rotary actuating knob (8) of the fastener which has a relatively shallow curve projects over the outer material (25) towards the outside.

6. Shoe as claimed in Claim 2, characterised in that the fastener-receiving recess (14) with the rotary tensioning fastener (15) is disposed in the region above the actual heel (18a) of the foot (18).

7. Shoe as claimed in Claim 6, in a construction with a high upper, characterised in that the heel cap (24) is also extended upwards on its side parts in such a way that stabilising supports (24a, 24b) are formed at least in the region of the ankle (20).

8. Shoe as claimed in Claim 7, characterised in that the loop (9a) of tension cable is guided along on the outer faces of the stabilising supports (24a, 24b).

9. Shoe as claimed in Claim 2, in a construction in the form of a half-shoe, characterised in that the loop of cable (9a) is guided along in the region below the edge (1c) of the upper surrounding the opening (19) through which the foot enters the shoe.

10. Shoe as claimed in Claim 1, characterised in that the lacing section (11) with crossing portions of tension cable for the two parts of the upper (1a, 1b) is aligned substantially centrally with respect to the instep region (3) and symmetrically with respect to the longitudinal central axis (A) of the shoe, and an approximately strip-shaped pull-flap (26), which has at least one gripping end (26a) for pulling this uppermost tension cable crossover point (12) off from the instep region, is placed at least below the uppermost tension cable crossover point (12).

11. Shoe as claimed in Claim 10, characterised in that the part of the pull-flap (26) located below the tension cable crossover point (12) forms a sliding guide support for the portions of tension cable.

12. Shoe as claimed in Claim 10, characterised in that the gripping end (26a) of the pull-flap (26) can be releasably fixed on the outer face of the upper (1) in the lacing section (11).



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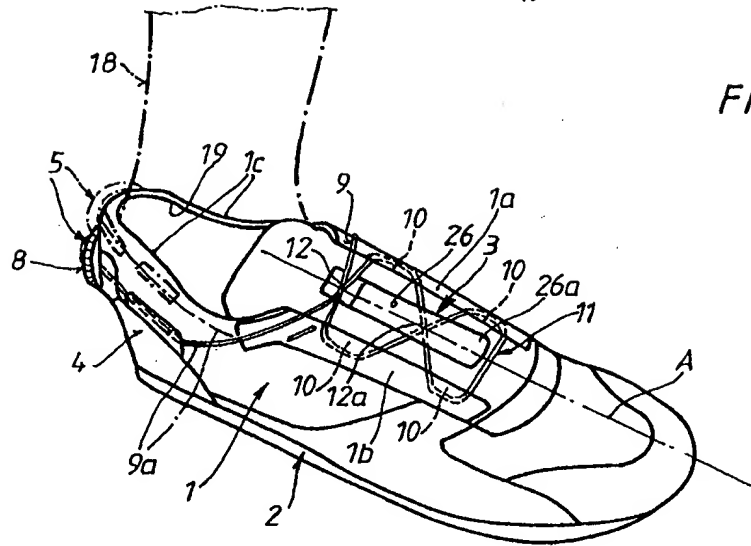
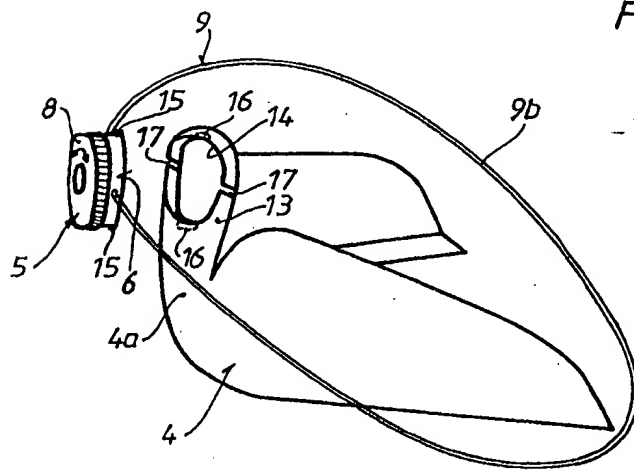


FIG. 1



**FIG. 2**



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FIG. 4

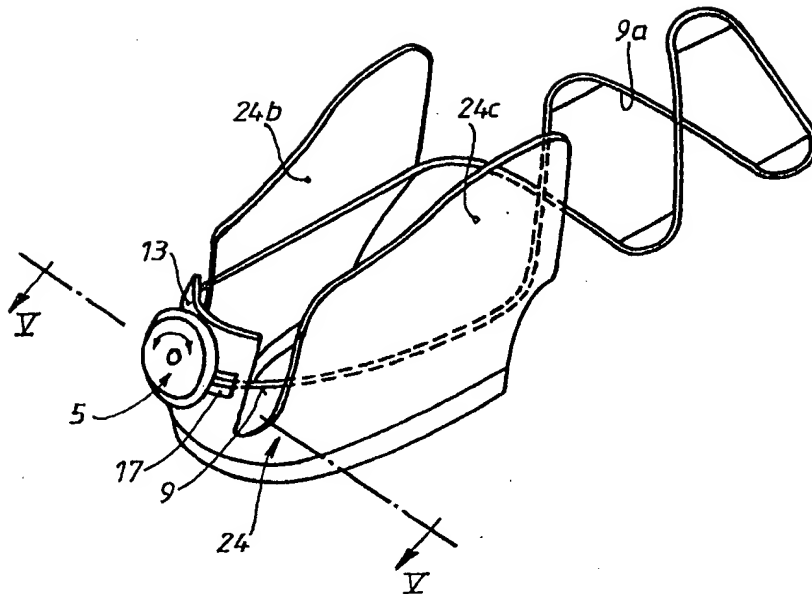
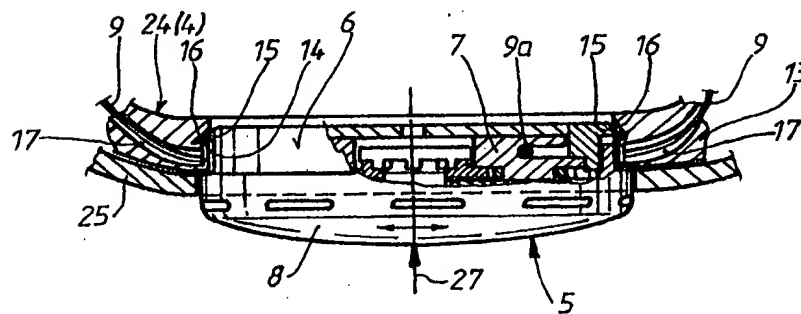


FIG. 5



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